PATENT

DOCKET NO.: CHOI-0038 **Application No.:** 09/678,171

Office Action Dated: March 18, 2003

Amendments to the Specification:

Please replace the paragraph beginning at page 5, line 10, with the following rewritten paragraph:

With this thought in mind, the present inventors have used a polymer to completely insulate the homogeneous catalyst to be supported from the poisonous surface of the support, thereby functioning <u>as</u> an insulation layer between the catalyst and the support. To constitute an insulation layer, the polymer should be harmless to cataly it zation performances, have chemical or physical interaction with the catalyst and support, and be insoluble in the styrenic monomer or polymerization solvent after the catalyst is loaded. Fig. 1 is a schematic drawing illustrating insulation concept of the supported catalyst according to the present invention by the insulation layer of polymer <u>2</u> between the support <u>1</u> and the metallocene <u>catalyst 3</u>.

Please replace the paragraph beginning at page 8, line 11, with the following rewritten paragraph:

The binuclear catalyst is represented by the following formula (C), (D) or (E):

$$R^{1}_{d}R^{2}_{e}X^{1}_{3-(d+e)}M^{1}-O-R^{4}-O-M^{2}R^{1}_{d}R^{2}_{e}X^{1}_{3-(d+e)}$$
 (C)

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where M^1 and M^2 are an atom of Group IVB;[,] R^1 [,] and R^2 [, R^4 , R^5 and R^6] are an alkyl group having 1 to 20 carbon atoms, an aryl group having 6 to 20 carbon atoms, an alkylaryl group having 6 to 20 carbon atoms, an arylalkyl group having 6 to 20 carbon atoms, a cyclopentadienyl group, a substituted cyclopentadienyl group or an indenyl group;[,] R^4 , R^5 , and R^6 are an alkylene group having 1 to 20 carbon atoms, an arylene group having 6 to 20 carbon atoms, an alkylarylene group having 6 to 20 carbon atoms, an arylalkylene group having 6 to 20 carbon atoms, a cyclopentadienylene group, a substituted cyclopentadienylene group or an indenylene group; [X] X^1 is a halogen atom;[,] d and e are an integer of 0 to 3;[,] and f is an integer of 0 to 2.

Please replace the paragraph beginning at page 9, line 12, with the following rewritten paragraph:

The multiple-nuclear catalyst is represented by the formula (F):

$$R^7 - \left(O - MR_d^1 R_e^2 X_{3-(d+e)}^1\right)_n$$
(F)

where M is an atom of Group IVB, R¹ and R² are an alkyl group having 1 to 20 carbon atoms, an aryl group having 6 to 20 carbon atoms, an alkylaryl group having 6 to 20 carbon atoms, a cyclopentadienyl group, a substituted cyclopentadienyl group or an indenyl group, R⁷ is a multivalent radical having C1-C20 alkylene, C6-C20 arylene, C6-C20 alkylarylene, C6-C20 arylalkylene, [an alkyl group having 1 to 20 carbon atoms, an aryl group having 6 to 20 carbon atoms, an alkylaryl group having 6 to 20 carbon atoms, an arylalkyl group having 6 to 20 carbon atoms], or a

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polymer having a polymerization degree of 5 to 10000, X is a halogen atom, d and e are an integer of 0 to 3, and n is an integer of 3 to 1000.

Q3

Please replace the Abstract with the following replacement Abstract:

The supported catalyst according to the present invention comprises a support of organic or inorganic powder with a high-surface area, a polymer coated onto the support and a metallocene catalyst. The polymer (1) contains polar groups that insulate the metallocene catalyst from the support; (2) interacts with the surface of the support; and (3) is insoluble in the styrenic monomer or polymerization solvent during polymerization after the catalyst is loaded. The styrenic polymer powder such produced by the present invention has good flowability and good morphology demonstrating a great deal of industrial applicability.

Attachment: Replacement Sheet for the Abstract